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NOTE ON BARLEY FOUND IN DUNG IN THE LOWEST LEVELS OF THE FARM MOUND MIDDEN AT REYNISTAÐUR, SKAGAFJÖRÐUR ICELAND

As part of the work of the Skagafjörður Archaeological Settlement Survey (SASS), the authors identified burnt barley in a dung matrix at the lowest levels of the Reynistaður farm mound midden (between ca. 870 and 1000 AD). Barley in dung, with other wetland seeds, suggests to us that a traditional agro-pastoral Scandinavian package may have been used at Reynistaður from its settlement.

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Introduction

While the consumption of barley in Viking Age Iceland has never been doubted, questions remain regarding the extent to which barley was imported or grown locally. Sagas document cultivation of barley in Viking Age Iceland in various locations (e.g., Þórarinnsson 1956) and there is circumstantial evidence for barley cultivation in the archaeological record (e.g., Nordahl 1988:101), and the potential for barley production in the environmental record (Simpson et al 2002). However, there is also evidence of Viking Age grain importation (Buckland et al 1990). Thus the scope and nature of

grain agriculture and place of traditional Scandinavian infield-outfield farming practices in Viking Age Iceland is unclear (Ross and Zutter 2007; Zutter 1999). Here we report on a find of burnt barley in a dung matrix at the lowest levels of the Reynistaður farm mound midden (after ca. 870 AD and well before 1000 AD). This find suggests that a traditional agro-pastoral Scandinavian package may have been used at Reynistaður from its earliest occupation.

Since 2001, the Skagafjörður Archaeological Settlement Survey (SASS) has been developing subsurface archaeological methods as a part of col-

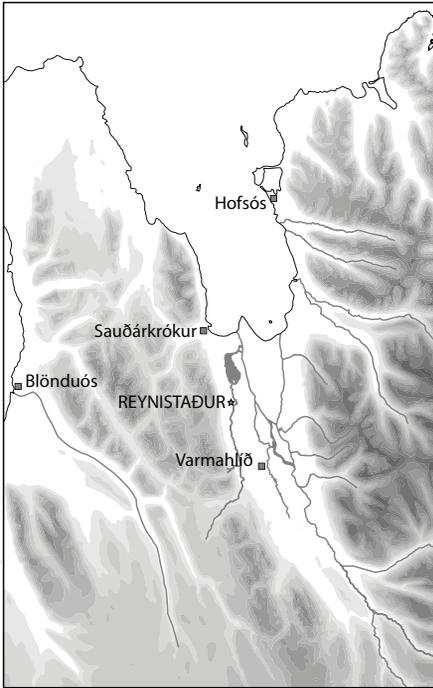


Figure 1. Map showing Skagafjörður with sites mentioned.

lecting settlement pattern data for the area between Reynistaður and Viðimýri in Skagafjörður (Steinberg and Bolender 2004; Figure 1). Survey at Reynistaður conducted in 2001-2002 included shallow geophysical prospection and systematic coring of the homefield area followed by a series of assessment excavations. The survey has identified a number of outbuildings in the homefield and demonstrated a continuous occupation of the primary farm mound dating to the initial settlement of Iceland. Reynistaður appears to be the earliest farm in the immediate vicinity and is one of the earliest farms lying just north of the Langholt region.

Setting and Methods

Reynistaður, originally called Staður in Reynines, is the farmstead of the only Earl of Iceland, Gissur Þorvaldsson, who died in 1268 AD (McGrew 1970; McGrew and Thomas 1974). Before that, sometime in the 10th century, it was said to be the home of Þórður hesthöfði Snorrason and of his son, Þorfinnur karlsefni, one of the early European settlers of Vínland (Kunz 2000). The farmstead is mentioned in several family sagas as well as in the Sturlunga sagas when it was a prominent estate of the Ásbirningar family. The farm continued to be an important economic and political center after the end of the Commonwealth as the site of a convent and as a parish seat.

Reynistaður is situated where the Sæmundar River (Sæmundará) enters the fjord bottom and turns north to flow to the sea as the Reynistaður River (Staðará). The bend in the river has cut the south and east edges of the primary farm mound exposing up to 2.5 meters of domestic deposits (Figure 2). The midden begins just above the green Landnám tephra layer (LNL) dated from Greenland ice cores to AD 871±2 (Grönvold, et al. 1995) and AD 877±4 (Zielinski, et al. 1997). The farm mound was stabilized by 2003 with a bolder dyke placed along the bank of the river preventing further erosion of the deposit. In the summer of 2004 two profile sections were cleaned, drawn and photographed. The top of the main section of the southern profile is at E 573372.9, N 474202.8 and 8.5m above MSL (ISNET93). Both exposed profiles indicate intensive and continuous cultural activity following the LNL deposition (Figure 3 & 4). Both profiles have the same tephra layers and similar cultural deposits including the V-1000 AD, the 1104 AD (H1) and prehis-

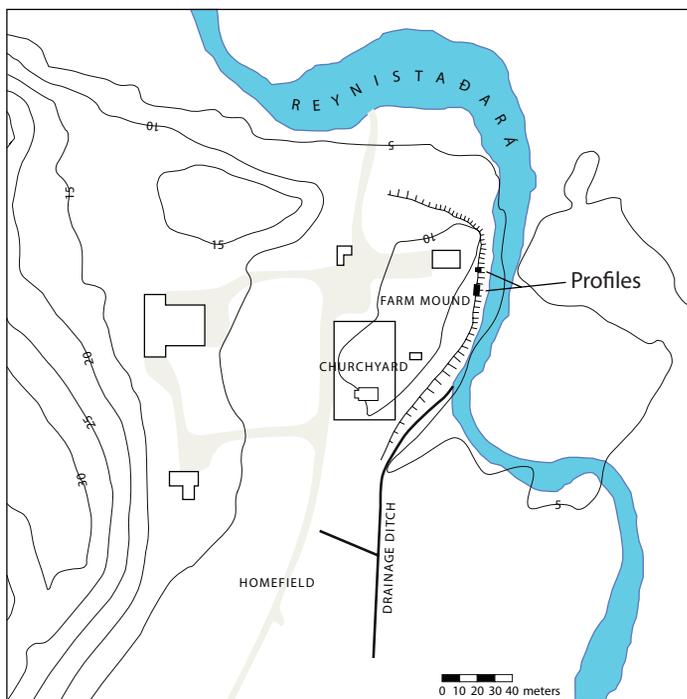


Figure 2. Map showing both Reynistaður profile locations.

toric H3/H4 tephras (Sigurgeirsson 2001). The east profile is the only one with the later (upper) grainy black tephra that is either the Hekla 1300 AD or the Hekla 1766 tephra.

The cultural layers in both profiles are immediately on top of a mottled organic layer with small amounts of the dark green landnám tephra (see also Hallsdóttir 1987). The LNL was on top of a mixed aeolian deposit with substantial amounts of the H3/H4 tephra (Buckland, Dugmore and Edwards 1997), which overlay river sand and silt. The bottom cultural layers of both profiles are dominated by gray and black ash, while the middle layers are dominated by mixed turf. The upper layers are dominated by reddish peat ash.

In 2007 the exposed midden deposits at Reynistaður from the southern profile were sampled for macrobotanical



Figure 3. Photo of southern profile at Reynistaður.

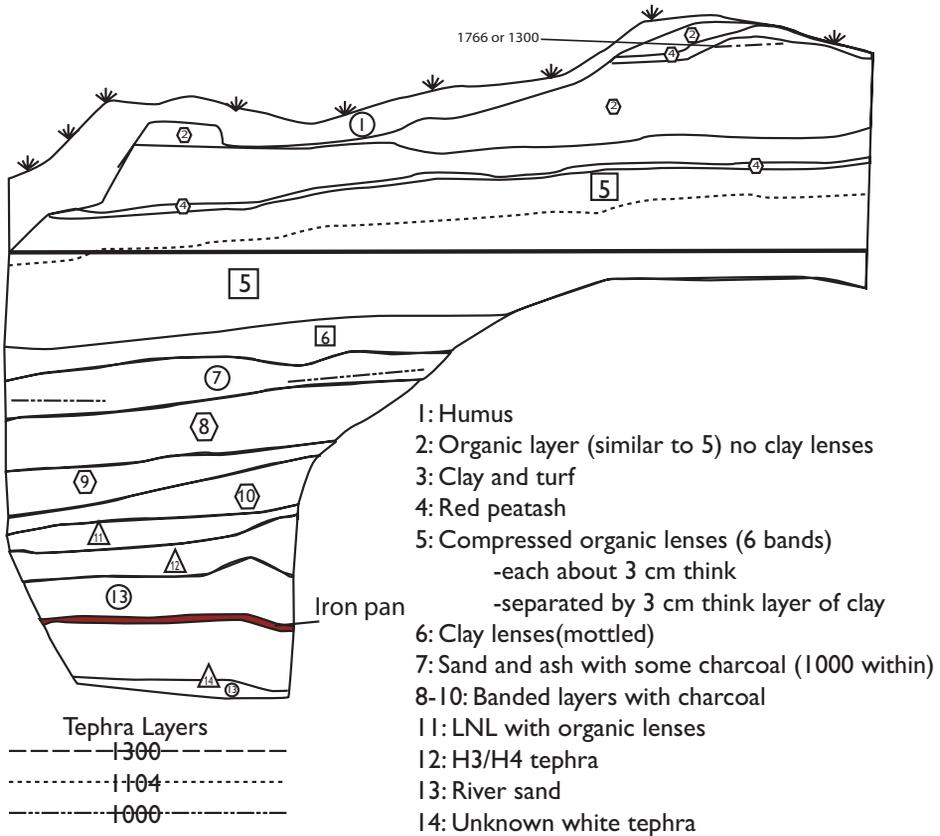


Figure 4. Southern profile at Reynistaður.

remains. A four-liter sediment sample from each of the layers was processed with a froth flotation device, and floating materials were captured in fine mesh cloth. Both the light and heavy fractions of the lowest cultural layer of the midden in the southern profile, Layer 11, was examined under 10 – 40x magnification with a Bausch and Lomb dissecting microscope, and identifications were verified by comparison with reference collections housed at the Fiske Center Paleoethnobotany Lab and with published sources (Hoadley 1990; Martin and Barkley 1961; Montgomery 1977).

Results

From Layer 11, we recovered charred and uncharred seeds, charred and uncharred dung, and charred and partially charred wood (Table 1). A 20-piece sample of the charred wood yielded birch (*Betula*), willow family (*Salicaceae*), conifer, and an unidentified diffuse porous wood, possibly rowan. Among the seeds, we found hulled six-row barley (*Hordeum vulgare*). These remains included charred and partially charred rachis fragments, the part of the plant that holds the kernel to the spike or ear. We also recovered seeds from herbaceous

plants such as chickweed (*Stellaria*), *Polygonum*, several types of wetland sedges (Cyperaceae), and a few grasses (Poaceae). While the proportions of charred to uncharred seeds change across taxa, for the most part, we found both charred and uncharred seeds of the same type. This fact, combined with the integrity of the stratigraphy and the presence of charred, partially charred, and uncharred wood and dung suggest to us that the uncharred plant materials were not later contaminants, but instead relate to the archaeological deposits.

Interpretation

The presence of charred dung and charred wood suggest that the people of Reynistaður were utilizing both types of fuel. Charred seeds are visible in the dung (Figure 6), so we believe that the dung is the source of at least some of the plant materials. In contrast to other Icelandic archaeological deposits (Nordahl 1988; Ross and Zutter 2007; Zutter 1999), the seed assemblage is not particularly diverse, being dominated by only two taxa. This lack of diversity may also indicate a single, limited, source for the seed assemblage: the dung. Both human and animal components to dung deposits have been identified at the Gjogur midden in Iceland (Ross and Zutter 2007), but with the exception of the barley, none of the plant remains appear to relate to plant foods typically consumed by people such as blueberries/cranberries (*Vaccinium*) or crowberries (*Empetrum*). We believe that the majority of the seeds and some of the smaller plant materials come from livestock dung and thus relate to foddering or grazing practices.

A substantial portion of the seeds were

Taxon	Count	%
<i>Hordeum</i> kernels	10	3%
<i>Hordeum</i> glumes	1	0%
<i>Hordeum</i> rachis	3	1%
Caryophyllaceae*	147	49%
<i>Polygonum</i>	3	1%
Cyperaceae	124	41%
Poaceae	12	4%
Total	300	-

*predominantly *Stellaria*

Table 1. *Seeds and Related Plant Parts Recovered from Layer 11.*

uncharred or only partially charred. This suggests that if dung was being burnt purposefully at Reynistaður, then it was being burned at very low temperatures (see Simpson et al 2003 for a discussion of burning temperatures). It is hard to imagine that at this early date at Reynistaður that any type of fuel was in short supply. Therefore, it is possible that the dung was not burned for heat but rather for its smoke to preserve food (e.g., Hangikjöt).

The plant remains indicate that barley was consumed at Reynistaður. While the presence of rachis fragments may merely be a normal component of poorly cleaned grain stores, they may also signal that barley was grown nearby. Moreover, the presence of these plant parts among pieces of charred and uncharred dung indicate that the barley may have been eaten by the livestock, which perhaps were allowed to graze on harvested fields or were fed grains and harvesting waste. Ethnographic accounts and archaeological data indicate that grains and chaff that were deliberately fed to livestock as fodder are evident in the dung (Valamoti and Charles 2005; Derreumaux 2005).



Figure 5. Photo of barley kernels from flotation sample of Layer 11.

Agricultural fields may also have been the source of the weedy plant seeds that we recovered. Chickweed accounted for nearly half of the seed assemblage in Layer 11. They are a common contaminant of grain stores and are frequently found in animal dung. Chickweed is a low-growing weed, which invades cultivated fields and disturbed areas around habitations (Renfrew 1973:164). These seeds may have been ingested as the livestock grazed in barnyards or on harvested fields. *Polygonum* is a cosmopolitan genus, tolerating a variety of environmental conditions, and the seeds we recovered may have come from heathlands, disturbed areas, or wetlands. Seeds from grasses were present although grassland plants were not well represented in the Layer 11 botanical

assemblage. In contrast wetland taxa, specifically Cyperaceae, dominated and comprised almost half of the assemblage. This suggests that the livestock were allowed to graze in these areas as well.

The plant remains recovered from Layer 11 largely tell us about three activities: fuel use, field agricultural practices and livestock grazing. The presence of barley grains and chaff suggests that the people of Reynistaður cultivated this grain. It is clear that the early inhabitants were utilizing two fuel sources, wood and animal dung. While the seed assemblage associated with the dung is most similar to that of sheep found by Ross and Zutter (2007), we cannot determine if the dung comes from sheep, cattle or both. We can suggest that the peo-

ple of Reynistaður may have grazed their livestock on sedges and perhaps allowed them to forage on harvested fields.

Conclusion

We believe that level 11 at the Reynistaður farm mound midden is very early in the settlement sequence, soon after 871 AD and well before 1000 AD. Barley in charred animal dung at such a time suggests that the inhabitants were growing barley and, after it was harvested, letting the animals graze on the field. It is likely, based on the total seed assemblage that the animals were also grazing on wetlands at the same time, not surprising given Reynistaður's location at the fjord bottom. If this is the correct interpretation, it implies that the complete Scandinavian agro-pastoral package was put into practice at Reynistaður soon after it was settled.

Acknowledgments

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Figure 6. Photo of dung recovered from flotation sample of Layer 11.

expressed in this material are those of the authors and do not necessarily reflect the views of any of the sponsors or supporters of this work. Reports and the raw data for this study can be obtained from <http://www.fiskecenter.umb.edu/SASS>.

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NOTES FOR CONTRIBUTORS

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Archaeologia Islandica is the first and only venue specially dedicated to aspects of Icelandic archaeology and material culture, and provides a forum for the wider dissemination of such work to the international community. The scope of the journal covers any aspect of archaeology and material culture relating to Iceland from the 9th century colonization of the island by Vikings to 19th century emigration of Icelanders to Canada - and beyond. Papers of archaeological fieldwork and artifact studies as well related historical, ethnographic and linguistic research are all welcomed, as are papers on material from outside Iceland but which are clearly relevant to discourses on Icelandic archaeology and material culture.

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All submissions should be sent to the editor, Gavin Lucas, at *Archaeologia Islandica*, Bárugata 3, 101 Reykjavík, Iceland; emails should be sent to gavin@instarch.is, marked Re: Archaeologia Islandica.

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Contributions are accepted of variable length, but generally should aim to fall between 4000-8000 words. Manuscripts must be in **English** and be accompanied by an **abstract** not exceeding 150 words, with a list of 3-5 **keywords**. Authors should also provide their institutional affiliation (e.g. University) and an email address for correspondence; if there is more than one author, a principal author

should be designated for all correspondence. All texts must be sent in an electronic version and a hard copy in the post, and the two versions must be identical. Keep formatting to a minimum, and use consistent styles for sub-titling. **Do not insert figures or tables in the text** (see below).

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Referencing should be made in the text by quoting the author(s), year and page number in brackets at the relevant point - e.g. (Morris 1995, 123). Full details of the reference should be provided in a separate bibliography at the end of the paper, using set conventions as in the examples below. Note that surname or patronym will always come first, even for Icelandic names, and order will follow alphabetically:

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STUÚVWXYÝZÞÆÖ.

Examples of References:

McGovern, T. H. (1994) "Management for Extinction in Norse Greenland", in: Crumley, C. L. (ed.) *Historical Ecology. Cultural Knowledge and Changing Landscapes*, pp.127-154, Santa Fe: School of American Research Press.

Morris, C.D. and Rackham, D.J. eds. (1992) *Norse and Later Settlement and Subsistence in the North Atlantic*, Glasgow: University of Glasgow

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Sveinbjarnadóttir, Guðrún. (1992) *Farm Abandonment in Medieval and Post-Medieval Iceland: an Interdisciplinary Study* (Oxbow Monograph 17), Oxford: Oxbow.

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All submissions will be reviewed by one or more referees, and acceptance for publication will be dependent on their comments. The editor endeavors to respond to all submissions in as short a time as possible, but the review process may typically take 4-12 weeks.

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